TouchTunes

INTERACTIVE NETWORKS

DA415 Amplifier
Quick Start Guide

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1 Introduction

This section introduces the TouchTunes DA415 digital audio amplifier, provides important safety information, and describes how to get customer support.

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About This Guide

This guide is intended for Operators of TouchTunes digital jukeboxes and TouchTunes technical support and field service personnel. It explains how to install and use the TouchTunes DA415 digital audio amplifier.

This amplifier features:

- Low power consumption.
- High-fidelity signal processing similar to AB type amplifiers.
- Small footprint.
- Overload protection.
- Overheating protection.

The DA415amplifier is available in two versions:

• A 3-channel version, installed in the Mini-Platinum speaker system.

• A 4-channel version, offered in the TouchTunes Ovation model wall-mounted jukebox.

Package Contents

The DA415 package contains the following components:

Part No.	Description	Quantity
700039-002	DA415 amplifier (3-channel)	1
OR		
700039-001	DA415 amplifier (4-channel)	1
AND		
300180-026	AC power cable	1

The following accessories for the DA415 amplifier are also available from TouchTunes:

Part No.	Description
300142-018	Category 5 cable, RJ45-RJ45
100000-001	Euroblock connector kit

Specifications

• Left channel / Right channel: 150W (RMS), 4 ohms per channel.

• Bridged bass channel: 300W (RMS), total load 8 ohms (3-channel amplifier only).

• Total harmonic distortion: 0.03%.

• Frequency response (all the channels): 20Hz- 20KHz, ± 0.5 dB.

• Stereo sound separation: ≥ 75 dB.

• Signal to noise ratio: ≥ 96 dB.

• Input ± 7V RMS balanced.

• Power: 90 to 130 V AC.

• Maximum power consumption: 1000W.

• Dimensions: Width=230mm, Height=85mm, Depth=330mm.

• Weight: 4.5 kg.

Important Safety Information

Please read the following important safety information before proceeding with product installation.

CAUTION: Do not defeat the safety purposes of the polarized or grounding-type plug. A polarized plug has two blades with one blade wider than the other. A grounding-type plug has two blades and a third grounding prong. The wider blade or the third grounding prong are provided for your safety. If the provided plug does not fit in your outlet, consult an electrician for replacement of the obsolete outlet.

CAUTION: See product enclosure for safety related markings.

CAUTION: To avoid overheating:

- Do not expose the DA415 to excessively high temperatures.
- Do not block the ventilation holes.
- Install the DA415 so that air can circulate freely around it.

CAUTION: Do not use the DA415 immediately after transferring the unit from a cold place to a warm place as condensation may have occurred on internal components. Wait for the unit to reach room temperature before using it.

CAUTION: Protect the power cord from being walked on or pinched.

WARNING: This symbol alerts you to the presence of "dangerous voltage" within the product enclosure that may be of sufficient magnitude to constitute a risk of electrical shock. Do not remove the cover or back. There are no user-serviceable parts inside. Servicing must be performed by qualified personnel only.

WARNING: To reduce the risk of fire or electric shock, do not expose the DA415 to rain or moisture.

Contacting TouchTunes

You can contact TouchTunes by:

- Using the links on the Contacts page in the TouchTunes Dashboard. Refer to the following section.
- Calling TouchTunes by phone. See "Contacting TouchTunes by Phone" on page 8.

Contacting TouchTunes Directly from the Dashboard

You can use the Contacts page in the TouchTunes Dashboard to email many departments at TouchTunes, including Technical Support.

Using the Contacts page is the easiest way to contact TouchTunes and also allows TouchTunes to respond to your question, problem or request very quickly. To access the Contacts page, choose **TouchTunes** | **Contacts** and then follow the appropriate email link for the department you want to contact:

Contacting TouchTunes by Phone

You can also get assistance by calling the TouchTunes Technical Support department toll-free at 1-888-711-5853. If you are outside of the toll-free area, you can still contact the TouchTunes Technical Support department by dialling 1-847-419-3300 and pressing 1 when prompted.

Note: Long-distance telephone charges may apply if you are calling from outside of the toll-free area.

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2 Hardware Overview and Installation

This section provides an overview of the DA415 three-channel and four-channel amplifiers, and explains important installation procedures.

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Overview

The TouchTunes DA-415 is a digital audio amplifier that uses Tripath's™ Digital Power Processing technology. The DA-415 Is a Class-T digital amplifier; Class-T is a proprietary technology that offers both the audio fidelity of Class-AB and the power efficiency of Class-D amplifiers.

There are two versions of the TouchTunes DA415 digital audio amplifier:

- A 3-channel amplifier: This amplifier is incorporated into the TouchTunes Mini-Platinum speaker system, and supports daisy-chaining of audio components.

- A 4-channel, 2-zone amplifier: This amplifier is currently offered in the TouchTunes Ovation wall-mounted jukebox.

Features

The DA415 amplifiers incorporate the following features:

Feature/Specification	Four-channel amplifier	Three-channel amplifier
Class-T Architecture.		
Proprietary digital processing technology.		
Uncompromising sound quality.		
Dynamic range of 102dB.		
Over-current protection.		
Mute input.		
Turn-on and turn-off pop suppression.		
Over-temperature protection.		
High speed switching power supply.		
Less heat, smaller footprint.		
Total harmonic distortion ≤ 0.01% (1W).		
Signal-to-noise ratio ≥ 100dB (A-weighted).		
Two balanced inputs.		
One input supporting daisy-chaining.		
Two stereo outputs (full-range).		
One stereo output (midrange and high frequencies) One bass output (low frequency).		
AC line voltage and frequency configurations: 90 to 130 V AC		
4-ohm (minimum) stereo per channel (150W).		
8-ohm per channel (75W).		

Benefits of the DA415 amplifier include:

- Requirement of only N-Channel MOSFET output transistors.
- Dramatic improvement in efficiency versus Class AB amplifiers.
- Signal fidelity equal to high-quality linear amplifiers.
- High dynamic range compatible with digital media.

Speaker Wiring Guide

This section provides important information concerning connecting speakers to the DA415 amplifier. Before continuing with speaker connections, it is strongly recommended that you read this section thoroughly.

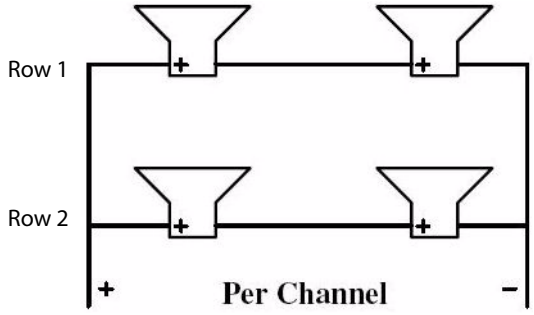
Note: The following examples are applicable to the DA415 4-channel amplifier only.

CAUTION: The DA415 amplifier has been specifically designed for use with 4-ohm speakers. Using speakers of a lower impedance may cause severe damage to the amplifier.
Furthermore, if 8-ohm speakers are to be used, they must be wired in parallel in order to provide a 4-ohm load to the amplifier.

CAUTION: Bose model 141 speakers will not function with either the 3-channel or 4-channel DA415 amplifier. Do not attempt connection of these speakers.
Similarly, wiring two pairs of **Bose model 301** speakers **in parallel** will result in unsatisfactory performance and may cause damage to your equipment.

Example 1: TouchTunes 2-Way Speakers

This example illustrates wiring of TouchTunes 2-way speakers (maximum 4 per channel) for a total impedance load of 4 ohms.



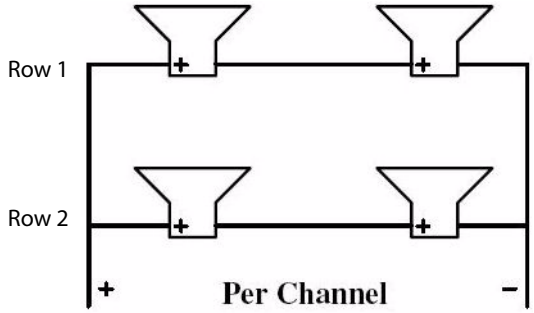
TouchTunes 2-Way Speakers Wiring

Row (series) impedance specifications	
Row 1	2 speakers in series: 4.0 ohms + 4.0 ohms for a total of 8 ohms per row.
Row 2	2 speakers in series: 4.0 ohms + 4.0 ohms for a total of 8 ohms per row.
Total impedance specifications	

Row (series) impedance specifications	
Row 1	2 speakers in series: 4.0 ohms + 4.0 ohms for a total of 8 ohms per row.
Row 2	2 speakers in series: 4.0 ohms + 4.0 ohms for a total of 8 ohms per row.
Connecting Rows 1 and 2 in Parallel	4.0 ohms total for this combination. Power over 4 ohms = 150W/channel.

Example 2: Bose 301 Speakers

This example illustrates wiring of Bose 301 speakers (maximum 4 per channel) for a total impedance load of 6 ohms.



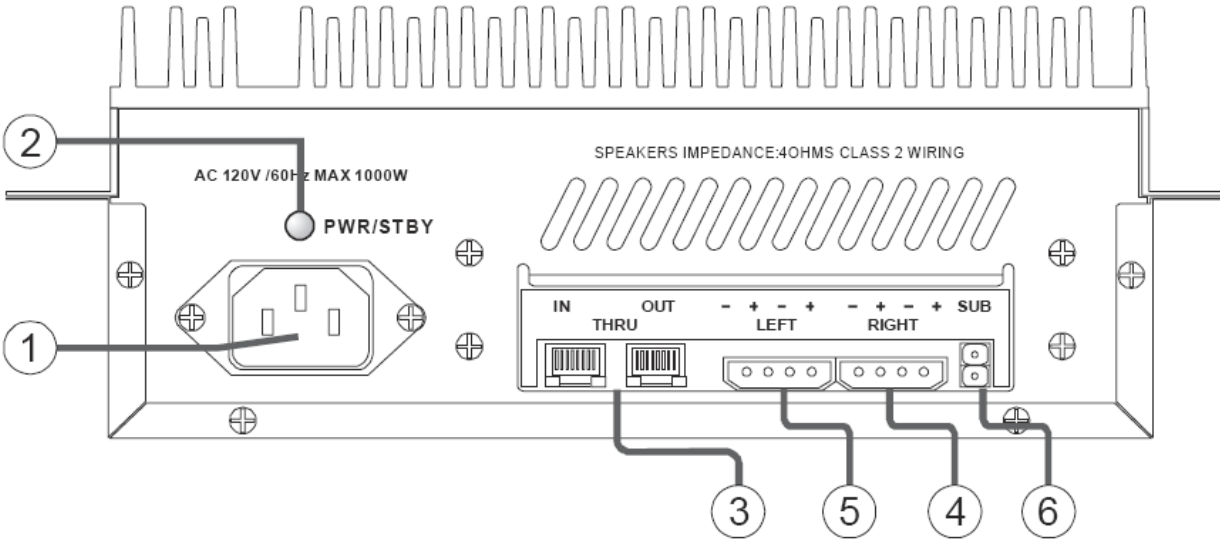
Bose 301 Speakers Wiring

Row 1	2 speakers in series: 6.0 ohms + 6.0 ohms for a total of 12 ohms per row.
Row 2	2 speakers in series: 6.0 ohms + 6.0 ohms for a total of 12 ohms per row.
Total impedance specifications	
Connecting Rows 1 and 2 in Parallel	6.0 ohms total for this combination. Power over 6 ohms = 100W/channel.

Three-channel Amplifier

The DA415 3-channel amplifier is shown in the figure below.

Note: The 3-channel amplifier provides RJ45 input and output connectors to enable daisy-chaining of components.



DA415 Three-channel Amplifier

1. **Power connector**

   Connect the supplied power cord here. The DA415 will automatically start when the power cord is plugged into a wall outlet (AC 120V /60Hz MAX 1000W). There is no power switch.

CAUTION: Do not connect the AC power cord to a wall outlet until all audio connections have been completed.

2. **Power/Standby light**

- Green: Indicates that the DA415 is operating normally.
- Red: Indicates that the amp is in standby or that an abnormal condition has been encountered, and that protection mode has been activated.

3. **Balanced audio input/output connectors**

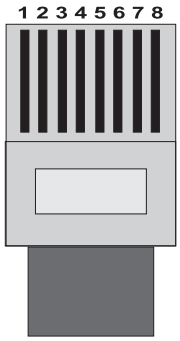
   Two RJ45 connectors are provided to connect the DA415 to other audio equipment via standard category 5 cable.

You can purchase pre-wired cable, or you can wire your own cable as follows:

Straight-through catagory 5 cable wiring

Color	Near End		Far End	Color
white + orange	1	·····	1	white + orange
orange	2	·····	2	orange
white + green	3	·····	3	white + green
blue	4	·····	4	blue
white + blue	5	·····	5	white + blue
green	6	·····	6	green
white + brown	7	·····	7	white + brown
brown	8	·····	8	brown

RJ45 connector



RJ45 Cable Wiring

4. **Left channel audio output connector**
   Provides audio out at 150W/4 ohms for two satellites using a euroblock connector.
5. **Right channel audio output connector**
   Provides audio out at 150W/4 ohms for two satellites using a euroblock connector.
6. **Bass channel audio output connector**
   Provides audio out at 300W/8 ohms for a subwoofer.

Installation

Please refer to the figure on page 13 while performing the installation.

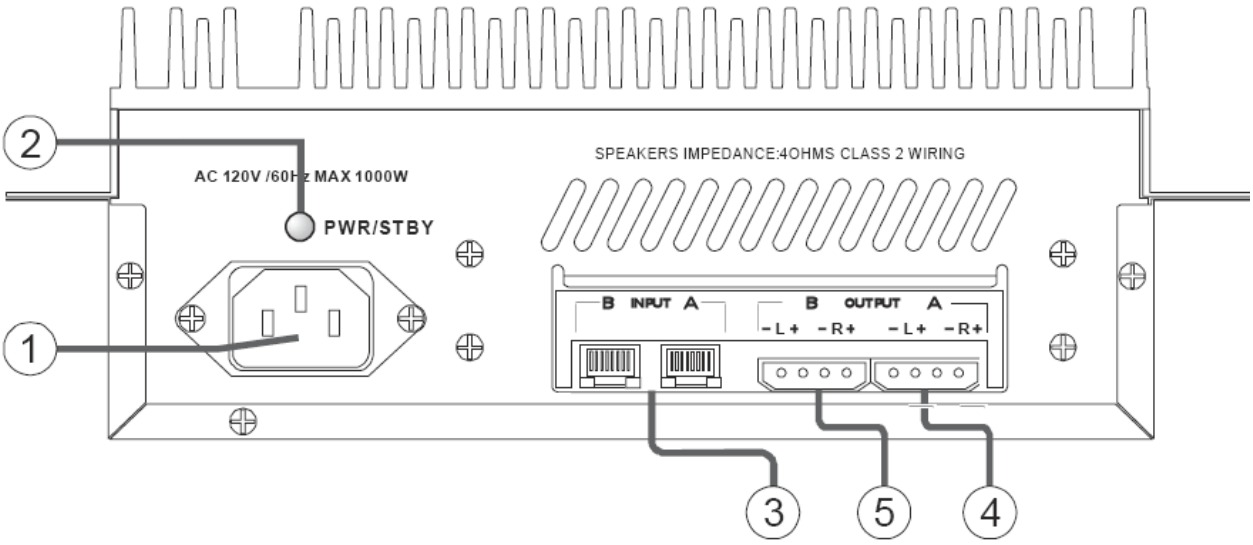
1. Ensure that the power supply cord is disconnected from the power connector on the DA415 amplifier.
2. Connect a standard category 5 cable with RJ45 connectors from the Zone 1 output on the MJS to the input connector (3) on the DA415 amplifier.
3. Connect the left and right Mini-Platinum satellite speakers to the DA415 by pressing their euroblock connectors firmly into the left and right channel audio output connectors (4 and 5) on the DA415 amplifier.
4. Connect the Mini-Platinum subwoofer to the DA415 by pressing the connector into the bass channel audio output connector (6) on the amplifier.

CAUTION: Incorrect speaker installation or speaker wiring configuration can cause severe damage to the amplifier. If you have not already done so, please refer to "Speaker Wiring Guide" on page 11 before proceeding.

5. **Optional:** Connect the DA415 to other audio equipment (for example, a second Mini-Platinum speaker system) using a standard category 5 cable with RJ45 connectors.
6. Power up the unit by connecting the power cord between a properly grounded wall outlet (AC 120V /60Hz MAX 1000W) and the power connector on the amplifier.

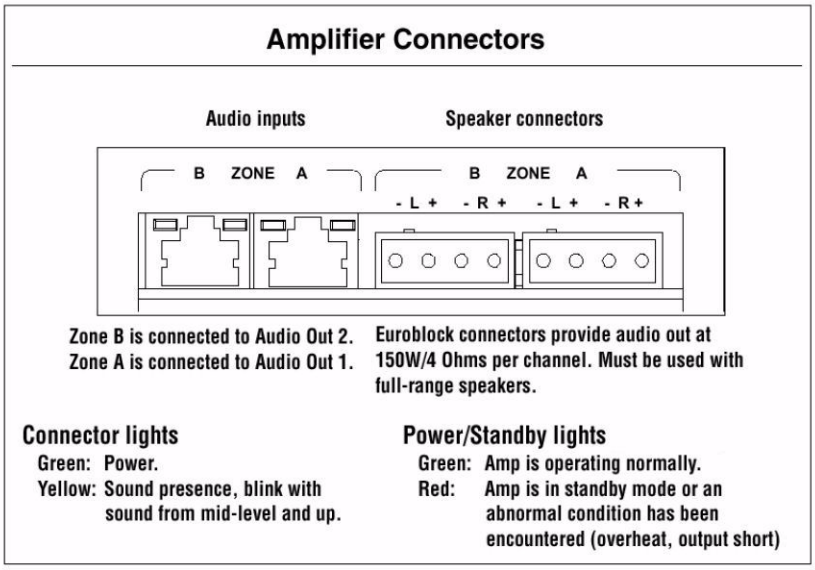
Four-channel Amplifier

The DA415 4-channel amplifier is shown in the figure below.



DA415 Four-channel Amplifier

Unlike the 3-channel model, the 4-channel amplifier does not support daisy-chaining of components; the RJ45 connectors for Zones A and B are both inputs.



Amplifier Connectors

1. **Power connector**
   Connect the supplied power cord here. The DA415 will automatically start when the power cord is plugged into a wall outlet (AC 120V /60Hz MAX 1000W). There is no power switch.

CAUTION: Do not connect the AC power cord to a wall outlet until all audio connections have been completed.

2. **Power/Standby light**

• Green: Indicates that the DA415 is operating normally.

• Red: Indicates that the amp is in standby or an abnormal condition has been encountered and that protection mode has been activated.

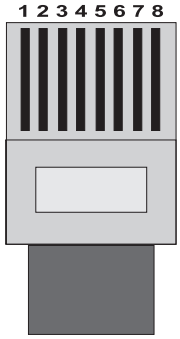
3. **Zone A and Zone B audio input connectors**
   Two RJ45 connectors are provided to connect the DA415 to the Zone A and Zone B audio outputs of the MJS via standard category 5 cable.

   You can purchase pre-wired cable, or you can wire your own cable as follows:

Straight-through catagory 5 cable wiring

Color	Near End		Far End	Color
white + orange	1	·····	1	white + orange
orange	2	·····	2	orange
white + green	3	·····	3	white + green
blue	4	·····	4	blue
white + blue	5	·····	5	white + blue
green	6	·····	6	green
white + brown	7	·····	7	white + brown
brown	8	·····	8	brown

RJ45 connector



RJ45 Cable Wiring

4. **Zone A left and right channel audio output connectors**
   Provides audio out at 150W/4 ohms for Zone A speakers using a euroblock connector.
5. **Zone B left and right channel audio output connectors**
   Provides audio out at 150W/4 ohms for Zone A speakers using a euroblock connector.

Installation

Note: With its inputs and outputs for 2 independent zones, the DA415 4-channel amplifier is significantly different from the 3-channel version, and involves a different method for speaker connection. Please pay careful attention to the following connection instructions.

Please refer to the figure on page 15 while performing the installation.

1. Ensure that the power supply cord is disconnected from the power connector on the DA415 amplifier.

2. Connect a standard category 5 cable with RJ45 connectors from the Zone 1 output on the MJS to the Zone A input connector on the DA415 amplifier.

CAUTION: Incorrect speaker installation or speaker wiring configuration can cause severe damage to the amplifier. If you have not already done so, please refer to "Speaker Wiring Guide" on page 11 before proceeding.

3. Connect left and right speakers to the DA415 by pressing their euroblock connectors firmly into the left and right channel audio output connectors for Zone A on the DA415 amplifier.
4. **Optional**: Connect a standard category 5 cable with RJ45 connectors from the Zone 2 output on the MJS to the Zone B input connector on the DA415 amplifier.
5. **Optional**: Connect left and right speakers to the DA415 by pressing their euroblock connectors firmly into the left and right channel audio output connectors for Zone B on the DA415 amplifier.
6. Power up the unit by connecting the power cord between a properly grounded wall outlet (AC 120V /60Hz MAX 1000W) and the power connector on the amplifier.

Amplifier Conversion

It is possible to convert a DA415 amplifier from a 3-channel to a 4-channel version, and vice-versa, by changing the amplifier's I/O board. Such a procedure should be undertaken by qualified service personnel only.

Note: TouchTunes does not recommend replacing a DA415 amplifier's I/O board with that of a different version, as complications may ensue should the amplifier require subsequent servicing.

For technical information and replacement parts, please contact TouchTunes.

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